

Flight Scientist Report
Tuesday 01/18/2022 ACTIVATE RF106

Flight Type: Statistical Survey Flight
Flight Route:

Special Notes: Excellent Cold Air Outbreak day and this is second of 2 flights where we go directly east towards ZIBUT and align with MBL winds to get as far as we can along the CAO evolution to hopefully hit the transition from overcast to open cell cloud structure.

King Air

Pilot report (Jamison):

Afternoon (2nd of two flights) cooperative flight with HU-25. Route of flight: KLF1-ATLIC-ZIBUT-36.00N069.25W-ZIBUT-ATLIC-TURET-KLF1. Weather clear with winds out of the west for KLF1 26 departure; B200 took off second, immediately following HU-25, based on upper wind profile. Uneventful climb with no undue delays from departure control; continued climb on course to FL270 with a temporary ~4 minute delay at FL230 for airspace sequencing. Winds at altitude were 95-115 kts from the WNW for duration of flight. Positioning with HU-25 was maintained within 10 minutes through 1st half of flight to turn point, with the B200 overtaking HU-25 prior to ZIBUT then advancing to 10 min ahead at turnpoint; airspeed was maintained at minimum practicable until approaching turnpoint. After turnpoint, the maximum achievable ground speed for B200 was 137 kts due to strong headwind component; the HU-25 caught up to B200 by midpoint between turnpoint and ZIBUT, then continued to advance ahead until 10-min coincidence lost at 40nm east of ZIBUT. B200 continued to fall further behind HU-25 for the remainder of flight. Conditions at altitude were smooth air and exceptionally clear visibility at altitude all the way down to cloud tops (~8K ft MSL). 5x dropsondes deployed; ZIBUT, turnpoint, 118nm ESE of ZIBUT, 61nm ESE of ZIBUT, and ATLIC prior to descent. Maintained FL280 until final dropsonde release at ATLIC then commenced 2000 fpm descent for recovery. Uneventful RNAV approach to r/w 26.

Flight scientist report (Harper):

Takeoff: 18:32:57 utc

Cloud conditions: no cirrus above – clear down to cloud deck

B200/HU25 coordination:

Outbound Leg: B200 ahead by ~1-2min until ZIBUT. Increasing to ~5 to 8 min for SE leg until turnaround point.

Inbound Leg: HU25 quickly passed B200. Within 10 for NW leg up to ZIBUT.

(ACTUAL sonde times are typically a minute or two earlier, these are times recorded by HSRL2 software that the user enters after the sonde launch)

Sonde 1: 19:18:29utc at ZIBUT

Sonde 2: 19:50:06utc at SE turnaround point

Sonde 3: 20:19:14utc - ~1/3 distance from SE turnaround point to ZIBUT

Sonde 4: 20:46:32utc-- ~2/3 distance from SE turnaround point to ZIBUT

Sonde 5: did not record this time in HSRL2 notes – launched at ATLIC probably around 22:02utc

Landing: not recorded

Instrument Status

PLEASE NOTE THAT I TURNED OFF THE APPLANIX SYSTEM SOME TIME BEFORE LANDING – This was an operational mistake as we usually don't power off the Applanix until after landing.

HSRL2: no issues

AVAPS: no issues

RSP: no issues

Satcom: no issues

Falcon

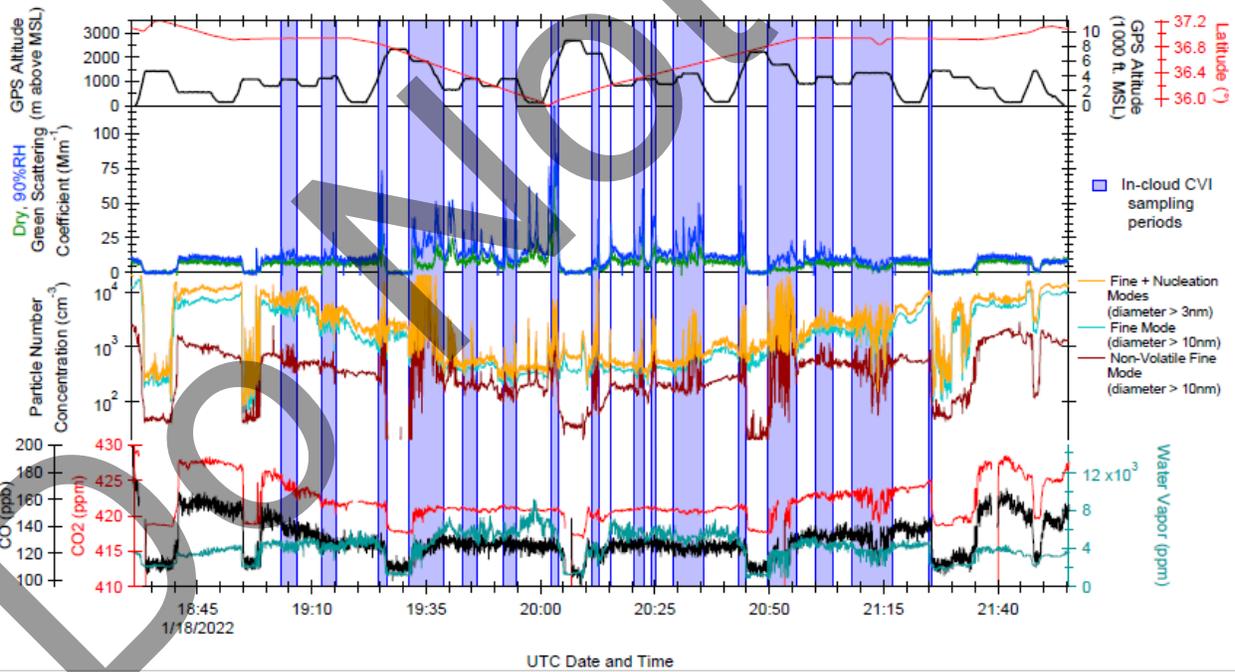
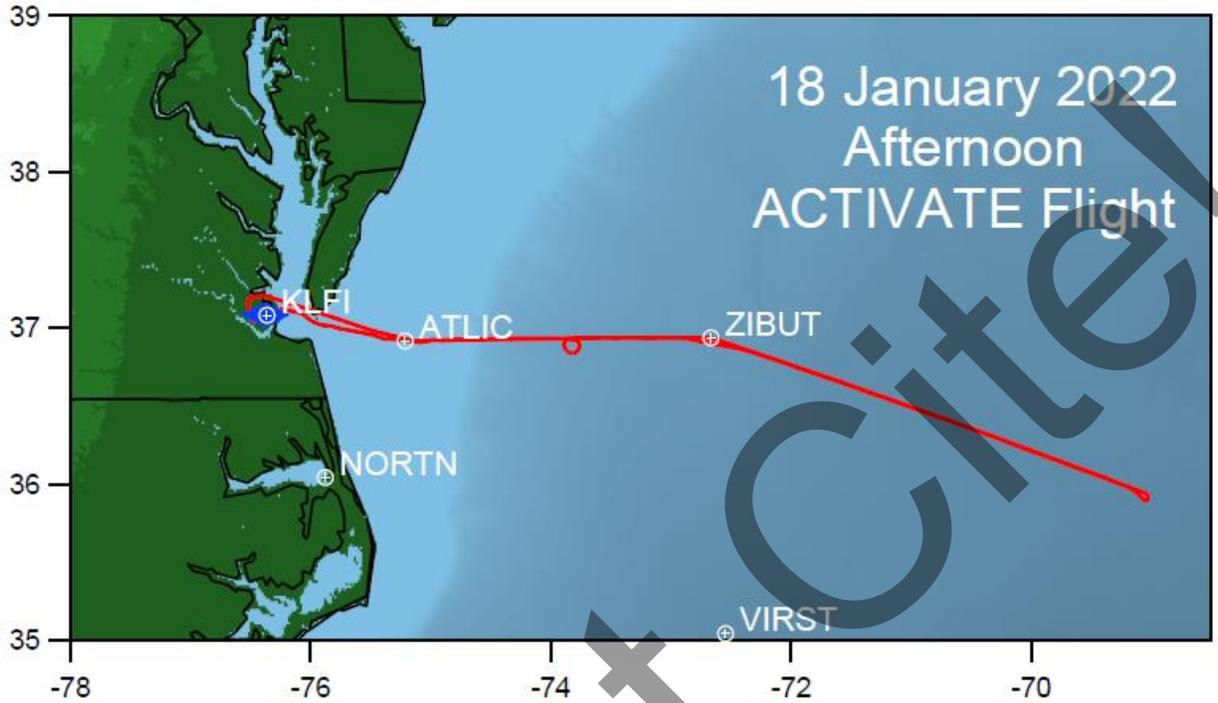
Pilot report (Slover):

Mission flown as planned: KLF I ATLIC ZIBUT N3600/W06915 ZIBUT ATLIC. Good statistical survey profile. Clouds peaked around 8000' MSL. At turnaround point, flew 10 nm past to allow King Air to get ahead and finish a min alt leg. Aircraft up, ready for next flight.

Flight scientist report (Crosbie):

PILS inoperative. Cold air outbreak conditions. Stat survey east to ZIBUT then along wind to ESE. Aim was to survey a transition in the cloud scene observed from satellite. Precipitation was abundant and was observed close to the transition region. Thereafter clouds were more broken and with a more complex structure with debris clouds at different altitudes and lack of a defined cloud base. Light precip

was quite widespread but with stronger showers associated with cores. Gradient in Nd was observed with downwind distance.



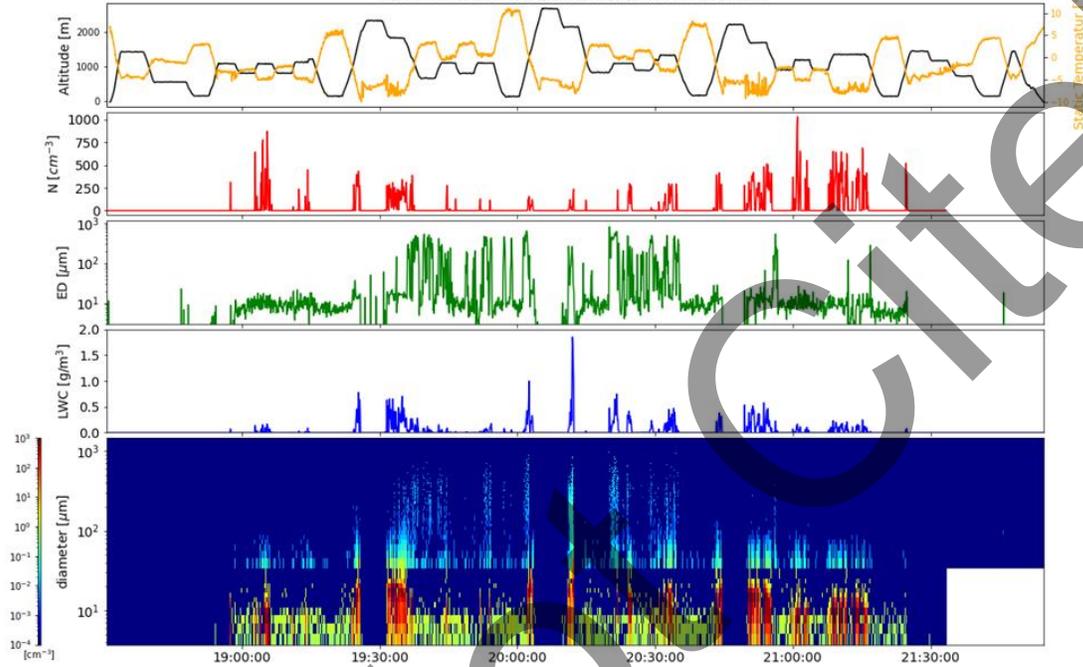
Quicklook ACTIVATE Cloud Probes (FCDP & 2DS) Quicklook

preliminary data, only for quicklook use

Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie



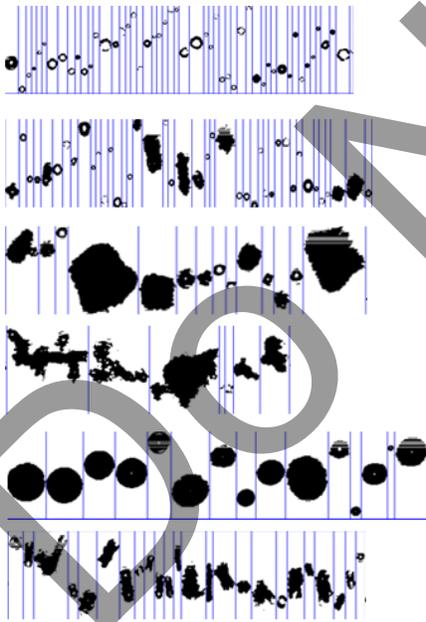
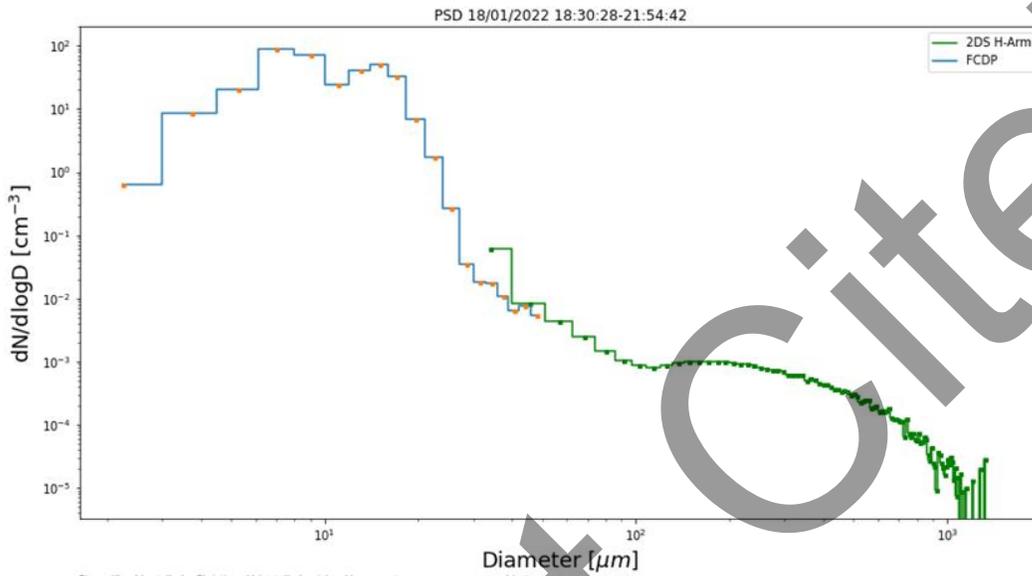
Cloud Probes (FCDP & 2DS) Quicklook 18/01/2022 18:30:28-21:54:42



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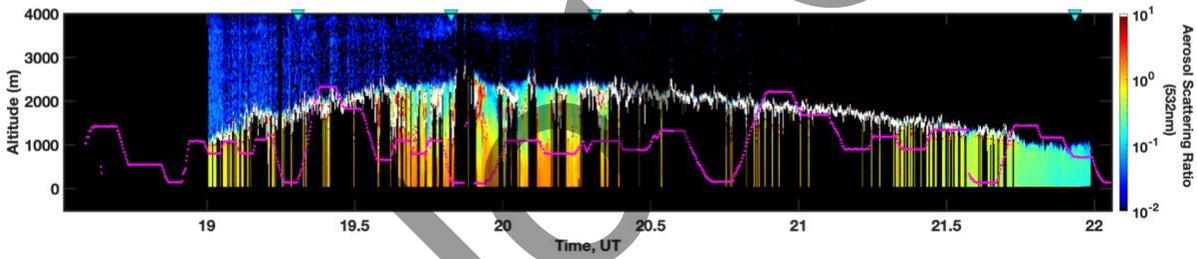
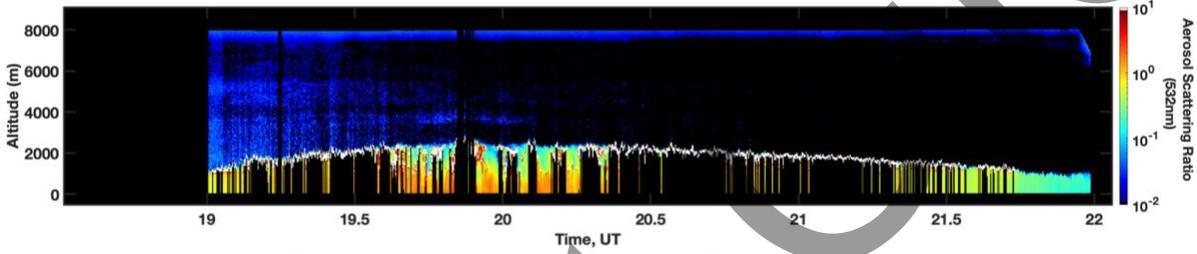
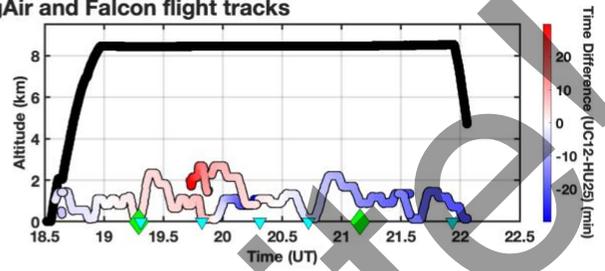
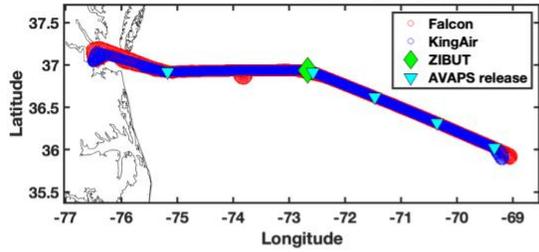
PSD ACTIVATE

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Mixed phase clouds with ice/liquid
Precip.

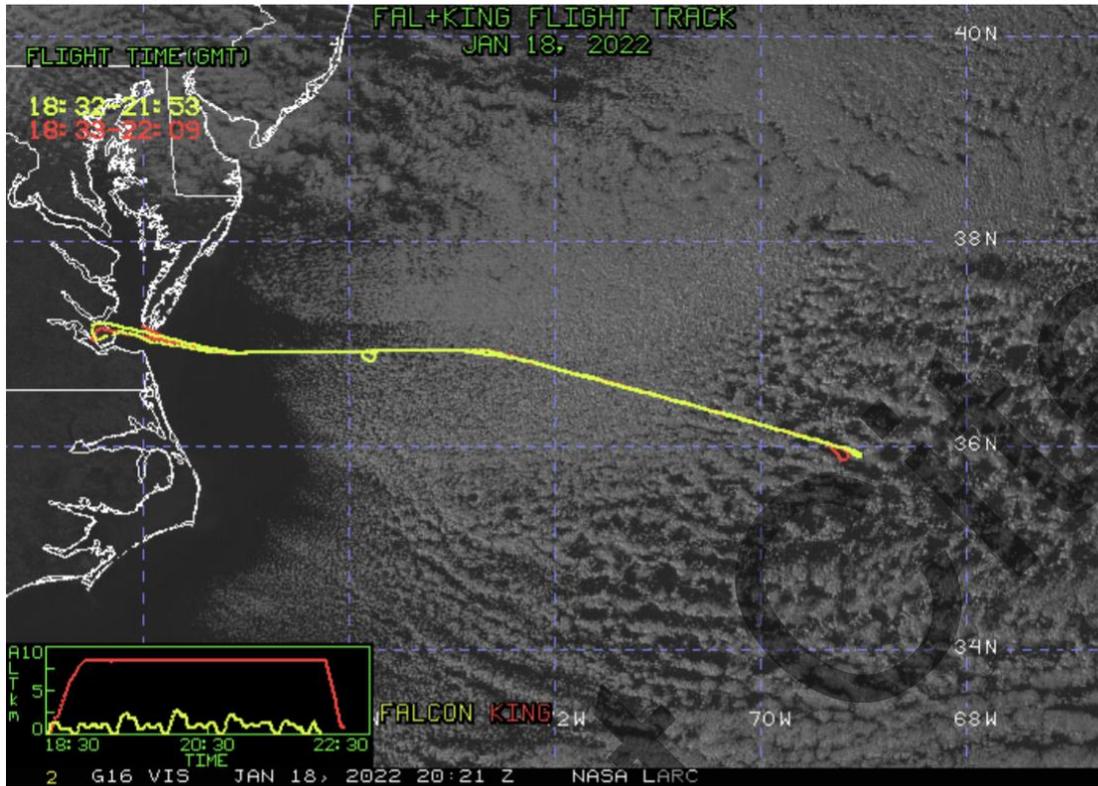
20220118 - ACTIVATE - KingAir and Falcon flight tracks



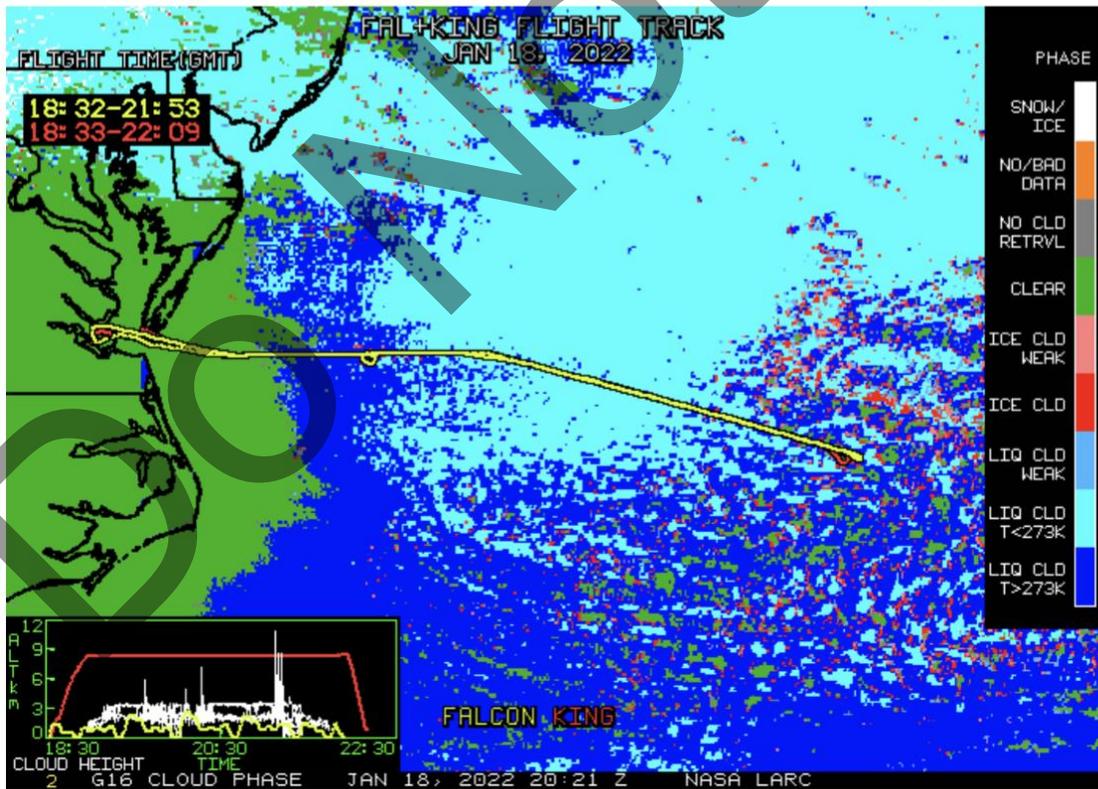
NASA-LaRC Clouds Group GOES-16 Quicklook Images for Flight 106, 20:21 UTC Jan 18, 2022

Do Not Cite!

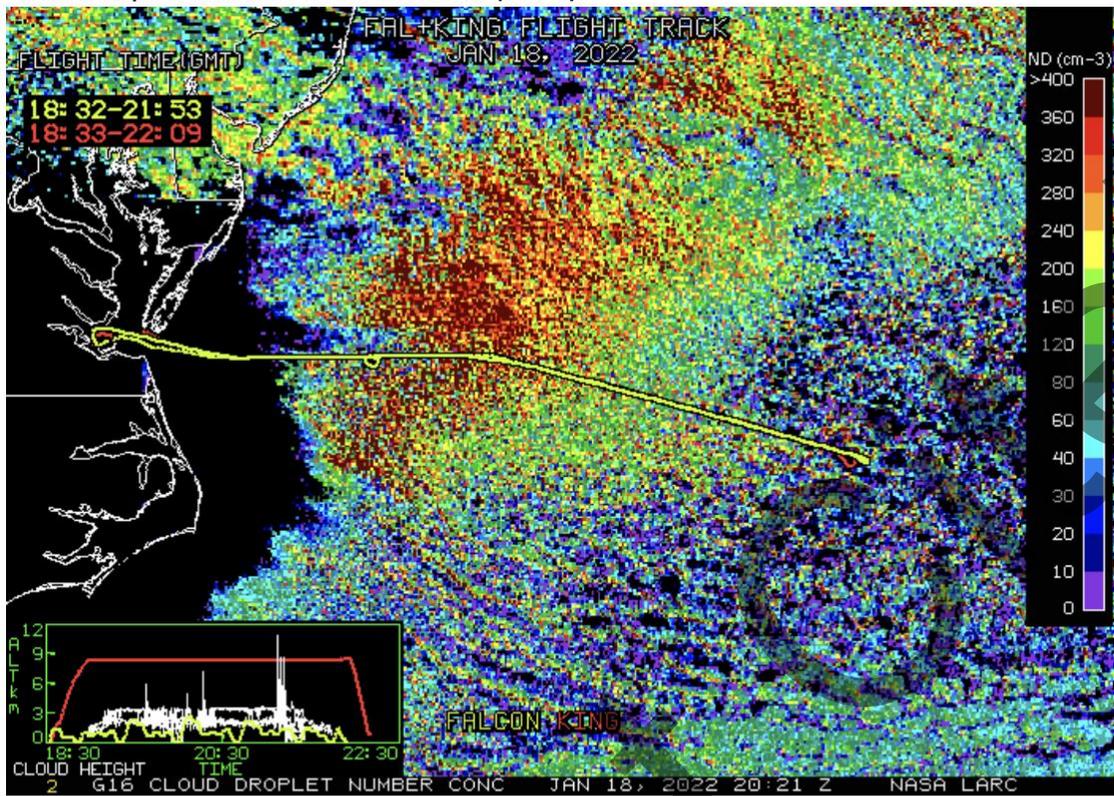
Visible Image



Cloud Phase



Cloud Droplet Number Concentration (cm-3)



Cloud-Top Height (Kft-ASL)

